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Number 9

# DISEASES *of the* CHEST

PUBLISHED MONTHLY by the FEDERATION OF AMERICAN SANATORIA

• A National Association of Chest Physicians •

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 Editorial offices 1018 Mills Building, El Paso, Texas  
 Business Address Myrtle at Virginia, El Paso, Texas

## CHEST

"Application for entry as second-class matter is pending."

(A MONTHLY PUBLICATION)

*"The most important factor in diagnosis in the majority of cases of pulmonary tuberculosis is keeping the disease in mind."*

*Lawrason Brown, M. D.*

## Editorial Comment

### This

### Journal.

WE, AGAIN, wish to impress upon our readers that *Diseases of the Chest* is intended to be of special interest and help to the busy family physician, who in the last analysis is the true case finder, so far as the private practice of medicine is concerned. The articles published from month to month are for the most part, brief, readable, and instructive. There are other publications on the subject of tuberculosis that deal with scientific research and are most excellent publications for those who are interested in that department.

However, *Diseases of the Chest* is designed more to be of interest and help to those men who are busy in the general practice of medicine. So again, we say, this publication will continue to be a simple, readable, journal, keeping alive the principles of early diagnosis and insisting at all times that every open case of tuberculosis be segregated. C. M. H.

### Both

### Sides.

THE PAGES of this journal are open at all times to both sides of all questions pertaining to tuberculosis, its diagnosis and treatment, as well as the question of the socialization of medicine.

Editorially, *Diseases of the Chest* is against legislation which will further tend toward socialization of medicine. It is true that the speciality of

tuberculosis has become more nearly socialized than any other branch of medicine. This has been due to the extensive drive against the disease, made by special organizations. Probably, the progress made in the reduction of the death rate and the apparent partial control has warranted this state of affairs, in so far as tuberculosis is concerned. However, this drive has, in many instances, been taken out of the hands of the medical profession and command has been assumed by social economists.

We feel that throughout this great drive, the crux of the problem, has been greatly neglected, viz: every individual physician should have been taken into the fold of this great movement. The great medical schools of this country should have had an intensive course on the diagnosis of tuberculosis, so that each graduate in medicine would be adept in case finding. The socialization of tuberculosis is really the fault of the medical profession and before lay workers take command in some other branch, probably cancer, it is high time that the medical schools adjust their curricula—to prevent another such occurrence.

Because of these situations, *Diseases of the Chest* was founded and is published in order to carry the fight against tuberculosis into the daily practice of every physician.

C. M. H.

# Rocky Mountain Tuberculosis Conference

THE ROCKY MOUNTAIN TUBERCULOSIS CONFERENCE will be held in Albuquerque on September 28th and 29th. This society held its first meeting two years ago at Colorado Springs. There were fully five hundred people in attendance. The enthusiasm seemed to warrant a continuation of the society, inasmuch as it seemed to fill a place in this western territory for people interested in tuberculosis.

The program will be divided into two sections, medical and sociological. They will hold independent meetings on the mornings of both days, and joint sessions in the afternoons.

There will be a complimentary dinner given by the Presbyterian Sanatorium and Hospital Monday evening, September 28th. Luncheons will be held on Monday and Tuesday noon at the Franciscan Hotel, which is the headquarters of the society. Reservation can be made directly with the Hotel, or through the local arrangements committee, of which Dr. Carl Mulky is Chairman.

Plan on being in Albuquerque September 28th and 29th. L. S. P.

## PROGRAM

Headquarters — Franciscan Hotel  
Albuquerque, New Mexico

MONDAY—SEPTEMBER 28th

### MEDICAL SECTION

Dr. Charles W. Mills, Presiding

9:00 A. M.—12:00

Surgical Collapse of the Lung

R. J. Friel, M. D.

Salt Lake City, Utah

Value of Phrenic Nerve Interruption  
as the Sole Procedure in Pulmonary Tuberculosis

J. M. Odell, M. D., Sup't.

Eastern Oregon State Tuberculosis Hospital

Modified Technique in Thoracoplasty in Tuberculosis

Felix P. Miller, M. D.

El Paso, Texas

Some Phase of Thoracoplasty

C. F. Stough, M. D.

Colorado Springs, Colorado

When Should Artificial Pneumothorax Treatment Be Discontinued?

Munford Smith, M. D.

Howard W. Bosworth, M. D.

Barlow Sanatorium

Los Angeles, California

Anesthesia to the Tuberculous

Arthur E. Guedel, M. D.

Professor of Anesthesiology

University of Southern California

### SOCIOLOGICAL SECTION

10:00 A. M.—12:00

Finding the Case of Tuberculosis

L. A. Dewey, M. D.

Epidemiologist for New Mexico

Bureau of Public Health

What Comes After Case-Finding

From the Public Health Nurse

Ada Taylor Graham

Ex-Secretary of the Utah Tuberculosis Association

From the Case Work Agency

Clarence Jackson, Director

Public Assistance, Colorado

Department of Public Welfare, Denver

From the County Physician

T. C. McCamant, M. D.,

County Health Officer

El Paso, Texas

From the Cripple Children Program

Vera Jones, M. D., Director, Division of Cripple Children, Colorado State Department of Health

Health

### JOINT LUNCHEON

12:00—2:00 P. M.

Significance of Tuberculosis in Childhood

J. A. Myers, M. D.

University of Minnesota

JOINT SESSION, SOCIOLOGICAL AND  
MEDICAL

Roslyn Earp, M. D., Presiding  
Director of Public Health, State  
of New Mexico

2:00 P. M.—5:00

Trends in the Care for the Indigent  
Sick by Public Agencies in New  
Mexico

Mr. Fay Guthrie, Director of  
Security and Public Assist-  
ance

In Colorado

Robert Cleere, M. D., Director,  
Department of Public Health

In Arizona

Miss Florence Warner, Director  
of Department of Public Wel-  
fare

Summary

Robert Brown, M. D., President,  
New Mexico Tuberculosis As-  
sociation

Socialized Medicine as it Affects the  
Private Sanatoria

R. B. Homan, Jr., M. D.  
The Homan Sanatorium  
El Paso, Texas

## TUESDAY — SEPTEMBER 29th

## MEDICAL SECTION

Dr. Charles W. Mills, Presiding

9:00 A. M.—12:00

Tuberculosis in the Aged

John W. Shuman, M. D.  
Assoc. Prof. of Medicine  
College of Medical Evangelists  
Los Angeles, California

Does Tuberculin Deserve a Place in  
the Therapy of Tuberculosis?

Thirty Years in Retrospect

Max Rothschild, M. D.\*  
Harry C. Warren, M. D.  
The California Sanatorium for  
the Treatment of Tuberculosis,  
Belmont, California

\*The paper entitled "Does Tuberculin Deserve a Place in the Therapy of Tuberculosis," was prepared by Dr. Max Rothschild, deceased, for the Rocky Mountain Tuberculosis Conference and it will be presented by Dr. Harry C. Warren. (Ed. Note).

Discussion by Sam'l H. Watson,  
M. D., Tucson

The Virulence of Tubercle Bacilli

H.J. Corper, M. D.  
Research Department, National  
Jewish Hospital  
Denver, Colorado

Empyema Complicating Pneumotho-  
rax Therapy in Pulmonary Tuber-  
culosis

Cap't Frank Y. Leaver  
Discussion by Maj. George F.  
Aycock  
Fitzsimons General Hospital  
Denver, Colorado

Management of Oleothorax Therapy  
in the Treatment of Pulmonary  
Tuberculosis

Leslie P. Anderson, M. D.  
Oakhurst Sanatorium  
Elma, Washington

## SOCIOLOGICAL SECTION

10:00 A. M.—12:00

Educating the Public About Tuber-  
culosis

Through the Christmas Seal Sale

Mrs. Francis C. Wilson, Secre-  
tary  
Tuberculosis Association of New  
Mexico

Through Schools

Mrs. Grace Corrigan  
State Rural School Supervisor  
of New Mexico

Through Local Organizations

Ruth Connely, Executive Secre-  
tary  
Tuberculosis Association of New  
Mexico

Through Publicity

Rabbi A. Lincoln Krohn, Albu-  
querque

## JOINT LUNCHEON

LeRoy S. Peters, M. D., Presiding  
Albuquerque, New Mexico

12:00—2:00 P. M.

Distribution of Tuberculosis Mortal-  
ity in Western United States.

(Continued to page 30)

## Obituary

*Max Rothschild*



It is with very sincere personal regret that we announce in these pages the passing of Dr. Max Rothschild on July 12th, 1936, at his home in Napa Soda Springs.

Dr. Rothschild was born on July 10th, 1871, at Hofgeismar, Germany, and educated at the Universities of Kiel, Heidelberg, and Berlin, being graduated by the Board of Medical Examiners of the University of Berlin in 1896. After a year of post-graduate study at Berlin in Tuberculosis, he came to San Francisco, arriving in 1899, to practice medicine.

In San Francisco he met Dr. Fehleisen, the discoverer of the streptococcus of erysipelas, whom he had known in Europe and together they had many enjoyable rambles about San Francisco—as Dr. Rothschild delighted in telling.

After several years of general practice he devoted himself exclusively to the treatment of tuberculosis and pulmonary conditions. He opened the California Sanatorium at Belmont in July 1910, which has since developed into one of the largest institutions for the treatment of tuberculosis in the west.

Professionally he was always alert to new ideas, being the first clinician in

America to induce an artificial pneumothorax for pulmonary compression. He and Dr. Fehleisen obtained the first reports of Forlanini's work in Italy and constructed a pneumothorax apparatus. He was also one of the first advocates of phrenic nerve interruption and a pioneer in the use of Tuberculin. He early discovered that dosage was the important factor in treatment and, if controlled to avoid reactions, beneficial effects were obtained.

His many contributions to medical literature included monographs relative to the early diagnosis of adult and childhood tuberculosis. Being a collaborator with Hanz Much and Deyke of Germany in many of their publications, he gained international recognition. At the time of his death he was preparing a paper to be delivered at The Rocky Mountain Tuberculosis Conference in September, which detailed his experiences with Tuberculin over a period of thirty years.

His knowledge of music and the arts, combined with an incomparable personality, made him an outstanding figure in any assemblage. Over and above this, however, he will ever live in the hearts of all his friends for his generosity and innate kindness. He was an eternal optimist and had the God-given ability of making every sick individual feel cheerful and buoyant after his bedside visit. Nor was this optimism assumed as a cloak for a bedside mannerism—his optimism permeated his whole personality. As a raconteur and host he was known and loved by most physicians of the Pacific Coast, in fact who would not love and envy anyone with such a philosophy and disposition.

A patient contributes—

He is not dead, and this is not the end—  
He leaves a living monument behind,  
And deep within our hearts the years will find

The ever-smiling presence of a friend...

H. C. W.



## Therapeutic Chaos In Bronchial Asthma

### *Introduction*

THE axiom, "the less we know about a disease the more profuse its therapy," is as true today as it was in the days of Hippocrates. This is especially so with the therapy of Bronchial Asthma.

The medical profession is not wholly responsible for the many forms of therapy. Every druggist prescribes for asthma across his counter. All drug manufacturers have "something good for asthma" and every charlatan and cultist has a "sure cure for it."

In view of all this and despite the enormous amount of accumulated material and knowledge relative to the subject, there is at present a crying need to bring some order out of chaos by separating fiction from fact.

So much has already been written on this subject that one hesitates to touch it for fear of appearing presumptuous, or what is still worse, of being guilty of the unpardonable sin of repetition.

Therefore, from the very first I wish to make it clear that this is not an attempt at originality. It is merely a desire to summarize etiologically, and as far as possible therapeutically, what is already known about the subject, and if it can be done, to establish some therapeutic order. I fully realize that this is quite an undertaking and if I succeed I shall feel that my efforts will not have been in vain, and if I fail in my attempt, I will have the satisfaction of knowing that I have not been the first one to fail. As some one has said, "It is upon us to begin the work, it is not upon us to complete it."

### *Allergy*

To achieve the proper therapeutic objectives in bronchial asthma, one has first of all to make certain that one is dealing with an allergic problem. He must also

BY

HENRY I. LEVITON, M.D.

Los Angeles, California

be sure to rule out cardiac, renal, or pulmonary pathology, as well as a possible bacterial invasion of the lungs, the bronchi, and the upper respiratory tract. In the light of our present knowledge, only true asthma is allergic and if this is so, no amount of desensitization will avail much in the presence of a chronic bacterial hyperplasia with vasomotor disturbance that so frequently complicates many of the cases of bronchial asthma. The principle of allergy in bronchial asthma is at present so well established that only the uninitiated can question it. The fact that in numerous instances of proven allergy, desensitization with proper antigens does not seem to bring beneficial clinical results, does not necessarily preclude the fact that the allergic theory is wrong. It only proves that in a given case the real offending agents were not discovered or the proper desensitizing material used.

What actually is responsible for the somewhat ill repute held by some for the allergic theory is, its unscientific application by those who have but a limited knowledge of the subject.

Those of us who understand these facts, have given up our limited office routine testing for allergy; not because of lack of faith in it, but because of our faith. It is because we have learned the necessity of being well equipped to handle the hundreds of substances and antigens necessary to properly carry out the tests and treatments. And, in spite of all these precautions, it frequently happens that after some patients go through the tedious and expensive allergic tests given by well trained and well equipped allergists, still, there is a large number of patients who do not obtain clinical relief.

In such instances, neither the allergist nor the allergic theory are to be blamed for the failure. The blame lies in the still

\*From the Medical Service of Cedars of Lebanon Hospital, Los Angeles, California.

limited understanding of the offending agents whose numbers are legion, because they include all foods, all pollens, dusts, bacteria, epidermals, emanations, etc. Therefore, the real wonder is not why some people are allergic, but why so few suffer from allergy and why there is not a more generalized metabolic revolt throughout the peoples of the earth, a revolt expressing itself in a more generalized manifestation of asthma, eczema, and urticaria.

That allergy is more prevalent than we believe it to be is noted by Miller, Piness, and Feingold (1) in their most interesting recent review of hundreds of cases from the records of the allergy clinic of the Los Angeles Children's Hospital. They report eleven cases of so-called allergic broncho pneumonia. All of these patients proved to be sensitive to foods, epidermals and pollens and showed a marked alleviation of symptoms when treated with specific antigen therapy. In most of these cases, the patients gave a family history positive for allergy.

The Mantoux test was negative in all cases. The Roentgen Ray films in most of the cases showed either localized or diffused infiltration of the chest, so typical of broncho pneumonia. There was also present typical asthma wheezing with sonorous and sibilant rales which were relieved by epinephrin. There was also noticed a comparatively low leucocyte count, no increase, at least not a marked increase, in the neutrophils with a comparatively high eosinophile count in the later stages of the disease. All this is certainly more typical of allergy than bacterial infection. In some of these instances, the so-called broncho pneumonia was of a recurrent nature as the patients had had several similar attacks before. This, the authors claim, proves the marked prevalence of allergy which is often entirely overlooked or taken for some acute bacterial infection.

In this connection, it is worth while to remember that there is such a thing as a negative phase in the presence of posi-

tive allergy. This point has been beautifully demonstrated by J. A. Myers in his communication on "Allergy, Immunity and the Genesis of the Tuberculin Reaction". He speaks of the so-called anergic state, a non-reactive phase of tuberculosis frequently found in individuals suffering from an overwhelming highly active infection. That there also exists an anergic phase in food, pollen, epidermal, and dust allergy is also known. Just as a negative tuberculin test does not necessarily prove immunity or absence of infection, so is it possible, at times, to have negative sensitization in the presence of positive clinical allergic manifestations. This, in view of the large number of substances to which one may be sensitive, would account for the failures in desensitization therapy in a large number of cases.

Before I speak of the therapy of bronchial asthma, I wish to make clear that there are as many therapeutic approaches to the disease as there are clinical manifestations. In this connection it is worthwhile to remember that a great deal in this approach depends upon the age of the patient, the chronicity of the disease, and whether one is attempting to give temporary relief or to work out a permanent cure. In general, it may be said that all infants and children suffering from upper respiratory manifestations such as rhinitis, polyposis, sinusitis, tonsillitis, frequent colds with cough, wheezing sibilant and sonorous rales are allergic. These children are also frequently victims of eczema, urticaria, and gastro-intestinal pains which most probably are but allergic manifestations of the same process. Such manifestations being considered as true allergy require first of all the finding of the offending agent or agents and the desensitization by proper antigens. This, as mentioned before, is a tedious and expensive process, therefore, it is suggested here that such children be first desensitized by a gradual elimination of the offending food, since in a great number of children it is food that is responsible for the asthmatic attacks

At this point it is worthwhile to remember Gay's (2) conclusions when he speaks of gastro intestinal allergy: "A food producing a symptom is also capable of partially relieving that symptom when taken later." In other words, the pain of peptic ulcer may be due to a localized anaphylactic spasm which is relieved by antianaphylaxis or actually by the interval feeding of an antigenic substance which originally caused the spasm. This phenomenon, if correct, is as applicable to the broncho spasms of asthma as it is to the gastro-intestinal spasm. As a general principle, it is also advisable to keep such children away from all animals, pollens, and epidermal contacts, since, as it is frequently found, there is a combination of food pollen and epidermal allergy.

Since milk and milk foods and various forms of processed grains are the mainstay of infants and children's diets, it becomes necessary to eliminate such foods one at a time and observe the results until every form of food is tested. In older children the various animal proteins, eggs and fish, should be similarly studied. It is surprising how simple it is at times to find the offending food. Once the food a child is sensitive to is established, that food must be eliminated from the diet. It is at times also possible to desensitize such a child by complete withdrawal of such a food and later by its oral use in medicinal doses as an antigen desensitizer. Some allergists do not believe this possible, but it is certainly worth trying.

In older children in whom untreated allergic manifestations have been of several years standing, and where there has already developed in the upper respiratory passages a bacterial chronic hyperplastic rhinitis, polyposis, or hyperplastic sinusitis with a vasomotor disturbance, no amount of antigen therapy alone will suffice. Here local surgery is frequently indicated. This goes to prove that even an allergic disease occasionally becomes a surgical problem when super-

imposed by infection, as is frequently the case in tuberculosis.

At this point, I wish to mention the debated question as to whether allergy precedes or follows surgery of the upper respiratory passages. I will return to it later and attempt to answer this question when I speak of the various forms of non-allergic therapy.

### *Case Reports*

In this connection I wish to briefly mention the case of a twelve year old girl who has been allergic since infancy. At the age of six months she developed an eczema of the face and at two years began to wheeze and become dyspneic. At the age of three she was pronounced by several physicians as asthmatic. At this period she also has had a middle ear infection which probably was an allergic manifestation. Up until six months ago, she has had frequent dyspneic attacks of wheezing, sibilant and sonorous rales on the slightest exertion or change of weather or on overeating. For the last three years she has been under the care of an allergist. She has had over three hundred sensitization tests and the paradox in this case was, that the food that she was supposed to have been sensitive to, as proven by positive sensitization, she could at times consume with impunity. She was especially sensitive to acacia and the bermuda grass, for which she was desensitized. On examining her upper respiratory tract, it was found that she had a chronic hyperplastic rhinitis with swollen lower turbinates and a marked vasomotor disturbance. Her lower turbinates were removed. It is over six months now and she has not had a single attack. However, several weeks ago she suddenly became acutely ill with pulmonary symptoms and high temperature, 106; the high temperature lasted three days. This was pronounced a case of lobar pneumonia. Viewing this case in the light of the Miller report and taking into consideration the previous history of the pat-



ient, I am raising the question as to whether this could have been a case of true lobar pneumonia. Most probably it was and if so, what influence did the presence of allergy, which for reasons previously mentioned was never properly desensitized, have on the infection? The hyperplasia in the upper respiratory tract was no doubt due to a chronic bacterial invasion of tissues of low resistance, caused by a preexisting allergic state, resulting in rhinitis, sinusitis, and bronchitis, and finally ending in pneumonia.

These generally are the findings in neglected allergy and in cases of adult chronic bronchial asthma; frequently in a more aggravated form and with extension of the secondary infection into the lower respiratory passages, as the second case to be reported here proves.

The second case I wish to mention briefly here, is that of a female in her late thirties who is at present a veritable pathologic museum of respiratory diseases and who gives a history somewhat similar to the previous case. At the present writing, she is in the Cedars of Lebanon Hospital, suffering from a chronic hyperplastic rhinitis and pan-sinusitis with a generalized vasomotor disturbance. Her lungs show the pathologic findings, so typical of neglected respiratory allergy, which are present practically in all cases of chronic bronchial asthma, of course, with some variations. This patient's Roentgenogram shows areas of chronic pulmonary fibrosis, peribronchial thickening, bronchiectasis, patches of emphysema, and some areas that may be interpreted as atelectatic. This is a typical case of grossly neglected allergy, inevitably resulting in a superimposed secondary bacterial invasion of practically all the upper and lower respiratory passages with various foci of infection. While in the hospital, and later as an out patient, she had a number of bronchoscopies, a Caldwell Luc operation, as well as an endonasal ethmoid and sphenoid operation.

I wish to report another case, which is typical of many chronic asthmatics,

and I also wish to call your attention to the dangers of self-medication and the use of untried and scientifically unproved therapeutic agents; also to call attention to the dangers of the Benzol group of drugs—drugs at present much in vogue and no doubt responsible for the present increased incidence of acute yellow atrophy of the liver. These are: Phenylcinchoninic acid, cencophan, quinophan, atophan, agotan, and phenoquin.

### *History*

Patient—42 years of age. Married.

While a patient at the Cedars of Lebanon Hospital five months previous, she had been diagnosed a case of bronchial asthma. She had had the usual allergic tests, however, she had never completed them. She had undergone several operations for nasal polyps and drainage of the sinuses. In spite of all this, her attacks continued and became progressively worse. She took innumerable patent medicines. Finally she bought an electrically driven atomizer distributed by a New York concern, using the German drug preparations called Glycirenin, Apholgol, and Jodirenal. Following this medication the asthmatic attacks ceased. The cure was "miraculous"; this, according to the statement of both patient and family. The patient used this cure for about one month. Three weeks previous to second admission to this hospital, patient noticed that she was becoming jaundiced; she began to feel weak and drowsy and was admitted because of these symptoms.

### *Examination*

A middle aged female, stuporous to comatose, skin intensely jaundiced. Eyes: Sclera deeply injected—pupils reacted to light and accommodation, fundi negative. Ears, nose and throat negative. Chest: no evidence of lung pathology. Heart: slightly enlarged to the left, tones of good quality, rate 120, no evidence of valvular

(Continued to page 28)



## Pulmonary Tuberculosis Surgery and the Sanatorium

IN THE last decade, surgery has come to play a prominent role in the treatment of pulmonary tuberculosis.

Many are the surgical procedures employed, the more common being thoracoplasty, phrenicectomy, intrapleural pneumolysis, plombage, scaleniotomy and intercostal neurectomy. The principle underlying all of these measures is one of pulmonary rest and compression.

The field of thoracic surgery is in its comparative infancy. Few surgeons are adequately trained in this branch of surgery. As a specialty, it is slowly emerging from the realm of general surgery. Eventually, it may be split off from general surgery just as, in the past few years, brain, genito-urinary, and orthopedic surgery have been.

With this background in mind, namely, the relative newness of chest surgery and the few men trained thoroughly in its intricacies, we can easily understand the predicament in which sanatoria found themselves when tuberculosis surgery suddenly dawned upon the therapeutic horizon. The only solution to the problem of pulmonary tuberculosis surgery seemed to be to send those cases suitable for surgery to various general hospitals which boasted a general surgeon with some interest in chest surgery. As a few years passed, these same surgeons became more grounded and adept in thoracic surgery, so that at the present time the indications for surgical intervention in pulmonary tuberculosis and the operative technique, in the main, are capably understood. Of late, these surgeons have taken younger men under their tutelage and trained them adequately in chest surgery.

This is, then, the status of surgery in pulmonary tuberculosis at the present time; that is, the majority of sanatoria send their patients to general hospitals to be operated on, usually by general

BY

HENRY LEO CABITT, M.D.

Boston, Massachusetts

surgeons with a leaning towards chest surgery. Only in a rare instance does the general hospital have a surgeon

doing chest surgery solely. A few of the sanatoria are equipped with operating units and a surgeon is called in to perform the necessary operations. It is a rare sanatorium which has, in addition to its own operating unit, its own resident thoracic surgeon. This apparent lack of competent chest surgeons can be attributed to the newness of chest surgery, the sudden rise of operative intervention in the treatment of pulmonary tuberculosis, and the few men specially trained in chest surgery.

The present arrangement and state of affairs appears to be a temporary one, and the entire matter is in a state of flux. Is there any real necessity for a change? If so, why, and in which probable direction will the change take place?

There are many reasons why the present set-up is inadequate as regards the best interests of the patient and the sanatorium. First, there is a lack of personal contact between the patient and the chest surgeon. We must consider the mental and emotional background of the tuberculous patient. They are being sent from the home-like atmosphere of the sanatorium, where they may have been a period of years, to a new and somewhat indifferent general hospital. All of their friends among the doctors and patients at the sanatorium have, in one fell swoop, been swept away and they must again build new attachments. This in itself would be difficult for any type of patient, but it is specially taxing for tuberculous patients. In the sanatorium their affliction is taken for granted and requires no comment, but in the general hospital, due to the lack of understanding and sometimes to the hostility of the other patients, theirs is the stigma of tuberculosis.

Usually, the chest surgeon in a general hospital accepts a patient from a sanatorium as being suitable for surgery merely by reviewing the x-ray films plus the comment of the sanatorium physician. He does not see the patient in his various moods, degrees of depression and periods of remission and exacerbation. It is entirely possible that if the surgeon had the opportunity to study and watch the patient for longer periods he might be guided not only in his operative technique, but in the proper time to operate. It is conceivable that with this added factor of more personal contact between the patient and the surgeon, a lowering of the mortality and morbidity rate in pulmonary tuberculosis surgery would be possible.

Secondly, the general hospital is usually at a distance from the sanatorium. This means that the patient must travel by train, or possibly by ambulance, for many miles. This trip must, and does, tax the strength of the tuberculous patient. On more than one occasion, a patient with pulmonary tuberculosis admitted to a general hospital after a long trip from the sanatorium is so exhausted that days and sometimes weeks of bed rest are necessary before the patient once again shows a semblance of his former reserve and resistance. It might be argued that those who react so poorly to an extensive journey are not fit subjects for surgery, but it has happened that a patient who by reason of his x-ray film and general condition, seems to be ideal for operative intervention, has been weakened by the stress of added effort and fatigue.

Thirdly, the matter of expense must be considered. The length of stay in a general hospital for surgical treatment is variable, but every day must be paid for by someone. Either the county, city, state, or private organization foots the bill. Minor charges incidental to operation must also be taken into account. Although it is expensive to equip a sanatorium with a suitable operating unit, yet in the long run it will be cheaper for

the sanatorium, since the cost of maintaining the patient in a general hospital will be obviated. It is true that there is a definite minimum rate which is necessary to support a patient in a sanatorium, but the expense is less than that of keeping the same patient in a general hospital.

Again, if one reverts back to the preceding paragraphs concerning the expense of transportation of patients from the sanatorium to the general hospital, this item will also be eliminated; it is a considerable one, especially in those instances where the patient is moved from the general hospital to the sanatorium between the various operations, as for example, between stages of thoracoplasty.

Fourthly, there is bound to be an inadequate follow-up of the cases operated upon under the present system. No matter how interested the surgeon is in his cases or how faithfully he may intend to follow them, the fact remains that other duties are close at hand and the sanatorium is miles away. The physical and emotional changes after operation have been done, the late reactions and the exact knowledge of what happens to these patients months and years after operation are sometimes weakly understood.

At best, the follow-up of operated patients under the present system could not be compared with an arrangement whereby the surgeon would have closer, more frequent and almost personal contact with the patient from the day he enters the sanatorium to the day of discharge. Even after the patient has left the sanatorium, a more complete check-up can be made by men who are constantly examining the patient than by surgeons in general hospitals who have so many other interests and duties to take up their time.

Only by a sufficient follow-up can the exact indications for and the results of operative procedures in pulmonary tuberculosis be evaluated. It is not enough to send patients back to the sanatorium, who have merely survived the operation. One must know what happened to the patient

six months, one year, and five years after operation. Only by enlarging our knowledge on this score can we truthfully promise our tuberculous patients a cure.

Thus, it seems that there is a need for a change in the present set-up of the surgical management of pulmonary tuberculosis. First, because of lack of personal contact between the patient and the surgeon; second, because of the deleterious effects of transportation upon the patient; third, the economic factor of stay at a general hospital; and fourth, the inadequate follow-up of patients by the surgeon.

Assuming that a change in the present arrangement of handling pulmonary tuberculosis surgery is necessary, let us try to prophesy the manner in which it will come about.

First, every sanatorium of sufficient size, and most are large enough, will have its own operating unit. Although the expense of setting up such a surgical wing must be considered, yet, as brought out in the preceding paragraphs, it will be less expensive, in the long run, than transporting patients to and from the general hospital and maintaining the patients at the general hospital during the period necessary for surgical treatment. This is the first prophesy.

The second prophesy follows the first one logically, in that if the sanatoria are to have operating units they must be manned by surgeons who will come out to the sanatoria to do their operating. Regarding this phase of change in the present system there are three possibilities.

The first possibility is that the general surgeon interested in chest surgery, who is doing the pulmonary tuberculosis surgery in his own hospital, will see fit to travel out to the sanatorium to operate. This seems very unlikely, and almost without the realm of possibility, because the good general surgeon who is usually entrusted with these chest operations is so busy with his other surgical problems that he will not have the time to make these frequent trips to the sanatorium.

Therefore, pulmonary tuberculosis surgery will pass into the hands of men in the category listed in the succeeding paragraphs.

The second possibility is that surgeons specially trained in chest surgery, and probably devoting themselves entirely to chest surgery as a limited specialty, will be appointed by each state or group of states, depending upon the bed capacity and number of sanatoria in a state, to visit the sanatoria under their jurisdiction and perform the necessary chest operations. This arrangement will be a much better one than the system in favor at present. These men will be interested, mainly, in chest surgery and so bring all their creative efforts into a completer and sounder basis for the performing of chest operations.

Again, these surgeons will be almost in constant touch with their sanatoria so that there will be more of the personal contact between patient and surgeon, and a better follow-up on the operated patients. This seems to be the next step in the evolution of the management of pulmonary tuberculosis surgery.

The third possibility, and the final refinement, will come when every sanatorium will have its own resident chest surgeon. At present, this is not possible because of the relative youth of chest surgery, and the fact that sufficient time has not elapsed thus far to adequately train a large enough number of men in this branch of surgery to satisfy the demand of all sanatoria.

When the time comes, and it will be soon, each sanatorium will have its own operating wing under the supervision of a resident thoracic surgeon who has been trained thoroughly in his chosen field. Then, and only then, will the ideal personal contact between patient and surgeon be established, and also a complete and searching understanding of what happens to the operated patients from the time of admission to the sanatorium

(Continued to page 26)



# The Tuberculin Test

THE TUBERCULIN test is a simple and effective method by which a person infected with tubercle bacilli can be distinguished from a person who has not been so infected. The present day emphasis on early diagnosis makes this test extremely valuable since it detects the presence of tuberculosis long before other means of examination have any value. "The time has arrived," says Myers, "when tuberculin testing should be as much a part of every medical examination, regardless of the age of the patient, as the Wassermann or urinalysis tests are."

In essence, the tuberculin test is a practical application of the complex tissue phenomenon known as allergy. Although the exact nature of allergy is still unknown, many of its actions are easily recognized. For example, it has been found that living tissue becomes sensitized or hypersensitive to foreign proteins, proteins differing from those of its own composition, causing a marked reaction to occur whenever the same protein is introduced a second time. Thus the tissues of a person infected with tubercle bacilli will show a definite and specific reaction when injected with the products of tubercle bacilli. Contrary-wise, a person who has never been infected with tubercle bacilli will show no reaction when injected with the same material.

The tuberculin test is simply a visible application of the above mentioned tissue reaction. When tuberculin, a substance composed of the products of tubercle bacilli, is injected into the skin of a tuberculous person the area of injection becomes red, swollen, and slightly brownish by the end of forty-eight hours. A non-tuberculous person, on the other hand, will show no reaction when injected with tuberculin. The tuberculin reaction is, therefore, definite, specific, and accurate. Definite because an area of redness with swelling and a brownish discoloration is

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easily differentiated from the normal contour and color of the skin. Specific because without a preceding infection with tubercle bacilli no reaction will occur. Accurate because no other known combination of factors will give the same result. That is, a person cannot become sensitive to tuberculin by any means except a previous infection with tubercle bacilli.

Since 1890 when Robert Koch first discovered tuberculin and noted its action, many methods of performing the tuberculin test have been tried. The most accurate, and therefore the most preferable, is the intracutaneous test proposed by Mantoux in 1907. By this method a small measured amount of tuberculin of known concentration is injected into the skin of the forearm producing a small weal at the point of injection. The test is most frequently performed by injecting 0.1 cc of a solution consisting of one part Old Tuberculin in 999 parts of normal salt solution. This dose contains 0.1 milligram of tuberculin and is a satisfactory amount for general purposes in the testing of children. Adults, on the other hand, usually react to a much smaller amount of tuberculin and should always be tested with a dose of 0.01 mg. to avoid excessive and unpleasant reactions. In order to obtain accurate information, all negative reactors must be re-tested with larger amounts of tuberculin. For children, the dosage is increased from 0.1 mg. to 1. mg., while with adults it is increased from 0.01 mg. to 0.1 mg. and then to 1. mg. When time is not an important factor it is usually advisable to make the first test with 0.01 mg. of tuberculin, even in the testing of children. In 1934 Long, Seibert, and Dorset perfected the material known as Purified Protein Derivative. This substance will, no doubt, soon displace Old Tuberculin as the standard material for making tuberculin tests. On the basis of three thousand



tests comparing the Purified Protein Derivative with Old Tuberculin, Long, Aronson, and Seibert concluded that PPD is superior in potency, uniformity, and general reliability.

Interpretation of the tuberculin test should normally be made at the end of 48 hours, at which time the reaction usually reaches its maximum. At this time a positive reaction produces a definite area of oedema surrounded by an area of hyperemia. A negative reaction shows nothing at all, or at most, a small area of redness without oedema. According to the National Tuberculosis Association classification, a positive reaction has been arbitrarily designated as one, two, three or four plus, depending upon the extent of oedema present. A reaction with definite oedema from five to ten millimeters in diameter, is recorded as a one plus reaction; with an area of oedema measuring ten to fifteen millimeters, it is called two plus; while one exceeding twenty millimeters is known as a three plus reaction. A four plus reaction consists of even more redness and oedema than the three plus, together with an area of necrosis. When the area of oedema measures less than five millimeters the reaction is called doubtful. Investigations so far have failed to show much significance as far as the extent of the reaction is concerned; consequently, many workers now record the test as simply positive or negative. The discoverers of PPD believe that with their standardized product the degree of reaction may assume significance.

A negative tuberculin test indicates that (1) the person tested has never been infected with tubercle bacilli or that, (2) a previous tuberculous lesion has completely healed and so has become obsolete. In the words of Eugene L. Opie, "A negative tuberculin reaction is evidence that there is no existing tuberculous infection." There are, of course, a few easily recognized exceptions to this rule. It is well known, for example, that the sensitiveness to tuberculin may be decreased or even disappear during the course of

exanthematous diseases or during the course of other diseases associated with high temperature. Likewise, the tuberculin test is negative immediately following infection with tubercle bacilli (during the pre-allergic stage) because it requires a period of from two to three weeks for the tissues to become sensitized.

A positive reaction has great significance both for the person tested and for the community at large. To the person reacting, it means that he has at some previous time been in contact with some one having active tuberculosis and that he now has at least one focus of living tubercle bacilli in his body. This, of course, indicates that a positive reactor has acquired the primary or first infection type of tuberculosis, and may signify that he has the secondary or reinfection type of disease. Unfortunately, however, the tuberculin reaction does not give information regarding the age, size or type of the tuberculous lesion. An arrested primary lesion too small to be demonstrated even by x-ray; a moderate sized well encapsulated lesion; or a large progressing lesion may produce the same degree of reaction. In short, the tuberculin test does not differentiate between active and latent tuberculosis. All positive reactors should, therefore, be examined thoroughly to determine the kind of lesion present.

Although most positive reactors will be found to have an inactive or arrested primary lesion, Myers maintains that they have a definite health liability. This liability results from two factors. First, there is the ever present danger of reactivation of the primary lesion from overwork, worry, or general unhealthful living. Such a reactivation will, of course, result in active tuberculosis of the secondary type, the kind of tuberculosis which causes disability and death. Second, the tissues of a positive reactor are allergic to tuberculin thus making the comparatively harmless products of tubercle bacilli virulent poisons. At the same time any exogenous infection with tubercle bacilli will of necessity result in a second

dary, and therefore, dangerous type of tuberculosis. From extensive studies at the Lymanhurst School, Myers found that a child with a positive tuberculin reaction was five times as likely to develop active tuberculosis as was a child with a negative reaction. These findings have revolutionized child health procedures since they have clearly demonstrated the necessity of watching all positive reactors very carefully for any symptoms of active disease. This line of action is exactly opposite to the one formerly employed when positive reactors were assumed to have acquired a more than normal resistance to tuberculosis.

The community benefit to be derived from use of the tuberculin test increases with the number of tests performed. When all individuals of a community are tested it is easy to spot sources of infection since the number of positive reactors will increase markedly around each source. Widespread tests also definitely localize the areas in which tuberculosis control should be most stressed. Such a series of tests reveals frequently the presence of unsuspected spreaders of tubercle bacilli and thus allow the community to take precautions against further contamination. Formerly the source of infection was frequently traced to a dairy, but present day checking of dairy cattle by means of the tuberculin test has practically eliminated this source.

World wide use of the tuberculin test has greatly increased present knowledge concerning the prevalence of tuberculous infection. Formerly, it was believed that all adults and 95 per cent of the children of teen age were infected with tuberculosis. Now it is known that these figures were much too high, the correct figures, in the United States at least, are around 50 per cent for adults and 10 per cent for children of teen age. The decrease in the number of positive reactors is taking place quite rapidly in many parts of the United States as shown by tests made upon various classes of the population. For example, at the Lymanhurst school,

where repeated tests have been made, there has been a drop of 43 per cent during the last fifteen years. Studies made upon university students have shown that the amount of infection varies markedly in different parts of the country. The highest incidence of positive reactors occurred at Yale University which showed 62 per cent, while the lowest was at Lewiston State Normal College, Idaho where only 15 per cent were positive.

#### *Summary.*

1. The tuberculin test is a simple and accurate method of determining the incidence of tuberculous infection.

2. The Mantoux or intracutaneous method is the preferable way of performing this test.

3. Interpretation of the reaction should take place 48 hours after the test is performed.

4. The degree of reaction has little significance; therefore, the result should usually be designated as simply positive or negative.

5. A negative test is one which produces no reaction, or at most merely a small area or redness without oedema.

6. A positive test is one which produces a definite reaction with hyperemia surrounding an area of oedema at least 5 mm. in diameter.

7. Aside from a few easily recognized exceptions, a negative tuberculin test is evidence that there is no existing tuberculous infection.

8. A positive tuberculin test is evidence that at least the first infection type of tuberculosis is present.

9. A positive tuberculin reaction denotes a distinct health liability because of danger from:

- (a) Reactivation of the present lesion.
- (b) Active tuberculosis from subsequent exogenous infection.
- (c) Harmful allergic reactions from any tuberculo-protein.

10. Large scale tuberculin tests frequently disclose unsuspected sources of infection.

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## The Influence of Pneumothorax Treatment On the Prognosis of Tuberculosis \*

SINCE the days of Hippocrates, rest, fresh air, and diet have been the fundamental measures employed by the medical profession in the treatment of pulmonary tuberculosis, but not until the middle of the nineteenth century was a scientific and systematic attempt made to carry out these agencies. In 1859 Dr. Brehmer, 1 a German physician, first introduced the idea of sanatorium treatment. Since that time, no greater advance has been made which offered more hope to the sufferer from tuberculosis than the advent of artificial or induced pneumothorax therapy. James Carson 2 of Liverpool in 1821 was probably among the first to recommend its use on theoretical grounds. In a series of essays on the physiology of the lungs he pointed out the advantages to be derived from this procedure. During the next fifty years practically nothing appeared in the literature pertaining to this subject. In 1880 Touissaint 3 and notably Forlanini 4 in 1882 advocated its introduction. Potain 5 in 1884 actually treated a case of spontaneous hydro-pneumothorax by replacing the fluid with sterilized air on repeated occasions. He treated two other cases in a similar manner and reported them in 1886. In 1885 Cayley 6 treated a case of severe hemoptysis in phthisis by open incision of the chest wall with gratifying results. In 1888 Forlanini 7 began to treat some cases and made reports of them in 1894 and 1895. J. B. Murphy 8 of Chicago in 1898 advocated its use and treated five patients, employing in his operation a trocar and cannula. In 1904 Saugman 9 introduced the water manometer. Finally, in 1906 Forlanini 10 reporting the favorable results of his experience with this method, published his

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paper, which at that time was not given by the medical profession the full recognition to which it was entitled.

It was not until a decade later, or during the last eighteen years, that this procedure, which offers to the patient the greatest hope of recovery, became fully recognized as a great step forward in the treatment of this disease. This belated recognition was probably due to two factors (1) the failure at that time on the part of the general profession to diagnose tuberculosis in the early stages, (2) the lack of the universal use of the roentgen ray.

Today these factors do not hold true because of the widespread dissemination of our knowledge of tuberculosis, both to the laity and to the medical profession. The diagnosis of this malady is made much earlier and more frequently than formerly. Then too, the development and almost universal employment of the roentgen ray by the profession and the hospitals has materially aided in the diagnosis and has become a necessary and valuable adjunct in pneumothorax therapy. The fact that nowadays no physician would consider a diagnosis of pulmonary tuberculosis complete without the use of roentgen ray films as an integral part of a complete history gives the diagnostician a better understanding of the pathology present, and enables him to visualize more clearly the type of treatment which may in a given case be productive of the most satisfactory results.

If, then, we wish to evaluate the influence of pneumothorax treatment on prognosis in pulmonary tuberculosis, we must of necessity consider the conditions in which this therapy is applicable. If cases are not well selected, the results obtained will not be a true criterion of its value as a therapeutic measure. For this

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reason we will enumerate the conditions in which artificial pneumothorax has a justifiable application, based on the consensus of opinion of a vast majority of workers in this field as shown in a review of the literature and in our own experience during the last five years.

(A) In all unilateral cases, if (1) there are constant rales to be heard over an area corresponding to two ribs or intercostal spaces or more with positive sputum and roentgen ray findings; (2) the disease is acute; (3) in spite of rest in bed, the activity persists or improvement is not satisfactory; (4) the patient for any reason is unable to undergo prolonged hospitalization; (5) there is repeated or severe hemoptysis or hemorrhage; (6) there are cavities with copious sputum; (7) certain complications, such as tuberculous laryngitis, should be present; (8) there is massive atelectasis or massive fibrosis.

(B) In bilateral cases the same indications are employed, influenced somewhat by the condition in the contralateral lung.

In reviewing the literature of the last fifteen years we find numerous reports based on statistical evidence of the beneficial effects of pneumothorax. Saugman and Brauer 11 report that out of 310 far advanced cases during the first year 74 or 33.9 per cent were fit for work; after the first year's treatment 42 per cent; and from the fifth to tenth year 30 per cent. This covers the period of 1907 to 1918. Moreover, Saugman stated that he did not know of any other treatment that gave third stage sputum positive cases 33 per cent chance of being able to work after seven years. Dumarest 12 states that in 209 cases up until 1923 he obtained favorable results in 129 or 56.3 per cent, and unfavorable in 100 cases, or 43.7 per cent. Bonzoni 13 has collected statistics from

3680 cases treated from 1916 to 1925, including 71 cases under his own observation. Of this total 25 per cent were described as cured, 27.1 per cent as improved and 31.2 per cent as dead. Noveau 14 collecting results from 570 cases of fibrocaverculous tuberculosis from Rist's clinic found 31 per cent clinically cured, 17.5 per cent improved, 17.5 per cent stationary and 34 per cent unimproved and dead. The Matsons 15 among 423 cases of fibrocavercous and fibrocavercous cavernous cases obtained results which are closely similar; namely, 32 per cent clinically cured, 20 per cent arrested, 16 per cent unimproved, and 32 per cent dead. Again the Matsons

Table 1. Diagnosis in 185 Cases at Time of Beginning of Pneumothorax Treatment.

|                                      |      |                       |
|--------------------------------------|------|-----------------------|
| Minimal type .....                   | none |                       |
| Moderately advanced bilateral.....   | 14   |                       |
| Moderately advanced unilateral ..... | 31   | (total 45 or 24.32%)  |
| Far advanced bilateral.....          | 87   |                       |
| Far advanced unilateral.....         | 41   | (total 128 or 69.20%) |
| Tuberculous pneumonia .....          | 8    | (or 4.32%)            |
| Atelectasis .....                    | 4    | (or 2.16%)            |

Table 2. Incidence as to Sex.

|                       |               |
|-----------------------|---------------|
| Males .....           | 51 or 27.57%  |
| Females .....         | 134 or 72.43% |
| Up to 20 years .....  | 20 or 10.8%   |
| 20 to 30 years .....  | 85 or 45.95%  |
| 30 to 40 years .....  | 41 or 22.17%  |
| 40 to 50 years .....  | 21 or 11.35%  |
| 50 years and up ..... | 3 or 1.61%    |

Table 3. Indications for Pneumothorax Treatment in 185 Patients.

|                                         |    |                                   |    |
|-----------------------------------------|----|-----------------------------------|----|
| Cavitation .....                        | 61 | Unilateral unilateral cases ..... | 10 |
| Stationary .....                        | 49 | Atelectasis .....                 | 4  |
| Hemorrhage .....                        | 35 | Spontaneous pneumothorax .....    | 2  |
| To continue Treatment .....             | 10 | Diagnostic .....                  | 1  |
| Severe toxemia (or acute illness) ..... | 21 | Relief for pleurisy.....          | 1  |

Most Frequent Complications Present at Time of Treatment.

|                                |    |                       |   |
|--------------------------------|----|-----------------------|---|
| Tuberculous enteritis.....     | 24 | thorax .....          | 2 |
| Tuberculous laryngitis.....    | 14 | Syphilis .....        | 6 |
| Spontaneous pneumothorax ..... | 4  | Hyperthyroidism ..... | 4 |

Table 4. End Results Obtained.

|                               |              |                      |
|-------------------------------|--------------|----------------------|
| Arrested and working.....     | 73 or 39.46% | (total 88 or 47.57%) |
| Arrested and not working..... | 15 or 8.10%  |                      |
| Improved.....                 | 35 or 18.92% | (or 123 or 66.49%)   |
| Unimproved .....              | 8 or 4.33%   |                      |
| Dead .....                    | 54 or 29.19% |                      |

Table 5. Types of Pneumothorax Established and Results Obtained.

|                                    | Number of Cases | Improved and Arrested Cases | Unimproved | Dead       | Sputum Negative | Positive  |
|------------------------------------|-----------------|-----------------------------|------------|------------|-----------------|-----------|
| Selective                          | 46              | 46 or 100%                  | 0          | 0          | 31 or 67%       | 15 or 33% |
| Complete                           | 39              | 30 or 77%                   | 1 or 2%    | 8 or 22.8% | 21 or 54%       | 18 or 46% |
| Incomplete                         | 100             | 47 or 47%                   | 7 or 7%    | 46 or 46%  | 46 or 46%       | 54 or 54% |
| Average hospital stay .....        |                 | 12.3 months                 |            |            |                 |           |
| Average duration of treatment..... |                 | 9.4 months                  |            |            |                 |           |
| Minimum period of treatment.....   |                 |                             |            |            |                 | 1 month   |
| Maximum period of treatment.....   |                 |                             |            |            |                 | 40 months |



and Bisailon 16 stated that the most favorable cases, fibrocaseous disease without cavitation, resulted in some 40 per cent becoming clinically well and 16 per cent arrested, while similar figures for caseous pneumonic tubercle dropped to 23 per cent and 3 per cent respectively. Maendl 17 also found that in a follow-up of 172 of his own cases a lasting result was obtained in 49 per cent. Hodson and Johnson of London 18 report in 1932 a series of 55 cases of which 34 remained free of symptoms and were either in actual employment or fit to work.

Finally, in the September, 1932, issue of the *Tubercle*, G. Hurrell 19 reported a series of 149 cases from 1923 to 1928, out of which 102 cases were successful, 75 per cent of the cases being between the ages of 15 and 20 years. All patients had tubercle bacilli in the sputum and very few were early cases. Of the successful pneumothorax patients, 29.4 per cent are still alive and of the unsuccessful only 1.06 per cent.

Our own experience with this treatment at the Mt. St. Rose Hospital, over a period of five years from 1929 to 1933 inclusive, is strikingly similar to the statistics above quoted as to the favorable results obtained. Out of a total of 1156 admissions during this five year period, 185 received artificial pneumothorax, a percentage of 16.1 per cent. This low average can be attributed to the fact that practically 96 per cent of our patients are in the second and third stages of the disease when admitted to the hospital. The diagnosis of these 185 cases at time of beginning of treatment is shown in table 1.

#### Comment

From an analysis of the foregoing tables, what inferences or deductions are we logically entitled to make? Today it is universally conceded that the earlier a patient is given the benefit of pneumothorax therapy the more satisfactory are the end results. Most observers state that the maximum benefits are obtained

in the early cases; in our series we have no patients under that classification. Our most favorable ones were the unilobar and unilateral cases with cavitation. These amounted to only ten. All the others were moderately or far advanced. Despite this fact we were able to obtain in our series of 185, 73 or 39 per cent who became completely arrested, with negative sputum. These were able to resume some form of work. Another 15 or 8.1 per cent were arrested, but are at present not working. This makes a total of 88 arrested cases who would otherwise never have recovered, representing a percentage of 47.57 per cent. The fact that 8 or 4.33 per cent remained unimproved and 54 or 29.19 per cent died is no reflection on this form of treatment. It merely implies that pneumothorax therapy was given too late in the course of the disease to be of benefit. It imparts to us the lesson that it is advisable to make our diagnosis earlier and to apply this remedy at the time when the disease process has not advanced too far. Even in cases where the end results are not completely satisfactory, this method is a life saving measure, especially when there are recurrent hemorrhages, or when in spite of bedrest the patient continues to run an acute progressive toxic course.

#### Conclusions

The best results are obtained in the unilateral group when there are no adhesions to interfere, and in bilateral cases with less than a third of the contralateral lung involved. The immediate effects are compression and rest of the diseased lung. Resulting from this we have in many instances closure of cavities, stimulation of fibrosis and reduction in the amount of the area involved. This treatment also has a marked effect on the temperature and sputum; 98 or 53 per cent of our cases were converted from positive to negative sputum and 123 or 66 per cent became afebrile. The ef-

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## The Psychology of the Tuberculous\*

HAVING lured the erudite to start reading this, let the title be hastily changed into "The State of Mind of the Tuberculous," lest one be accused of pretending to a knowledge which one does not possess.

Is there an attitude of mind characteristic of the tuberculous? Does the toxin produce anything comparable to the relentless deression of influenza, the abject apathy of ankylostomiasis, or the cunning mendacity of opium?

Surely it would be absurd to suppose that a disease that can so modify the rest of the body as to give rise to the tubercular facies would not at the same time modify the mental processes. And do we not find that those young patients, many of them cases of glandular or bony tuberculosis, who look so ethereal with their limpid eyes and long eyelashes and high colour, do tend to have mental characteristics of their own? They are gentle and kindly, enthusiastic and excitable, imaginative and amenable, and as a rule content; in fact like characters from a Sunday school story, whom unfortunately they too often imitate by dying young.

In pulmonary tuberculosis where the action of the toxin is intermittent the mental state varies, corresponding with the periodic activity of the disease. When the toxin is in large doses it produces a vivid effect.

J. B.—Young man who had seen some service in France was sent home with acute exudative disease. In the sanatorium the temperature rose to 102° every night for six weeks. Said he rather looked forward to the afternoon when his temperature began to rise, as then in imagination he sallied out into a phantom "No Man's Land" and armed with a knife or club wallowed in blood and excitement. This went on for hours night after night until

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he fell asleep. Later there was a sad reaction, when waking in a nightsweat, all his fiery imagining gone he faced a depres-

sing reality.

R. H.—Sailor with advanced bilateral disease being brought back from Australia. Ran a temperature 102° to 103° every night. Asked what he thought about then, he said he was imagining he was helping in perilous rescues at sea. He added a significant sentence: "But it never seems to work out quite right."

Anyone who has ever had a tuberculous temperature will recognize that "Treasure Island" faithfully reproduces the tempo of his thoughts. Perhaps that explains the wonderful patience of the tuberculous; there are consolations in vivid imagery.

Fishberg gives a long list of authors and poets in whom the tuberculous toxin, we may suppose, has supplied some at any rate of the stimulus to their mental processes.

Here are two cases in whom the stopping of the supply of toxin by the arresting of the disease was coincident with the end of their literary efforts:

F. G.—Had an active apical lesion and while in this state wrote verse. Had a very "good press" and was hailed as one of the coming Georgian poets. Met by chance ten years afterwards when the tuberculosis—and the verse—were almost forgotten. His wife said: "F. never writes now. Such a pity!" Was somewhat mollified when told he probably never would unless his lung broke down again.

D. C.—Had disease of both lungs. While in bed and under sanocrysin started writing to the papers and getting stories accepted. Envisaged a time when he could retire to a country cottage and make his living by writing. As his condition improved "rejection slips" became more frequent and finally monotonously

\*Reprinted from British Journal of Tuberculosis, July, 1936.



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Superintendent

Medical Director

Resident Physician





regular. Took to chicken farming.

Probably the best thing for a tuberculous writer or artist is that he should be a "leaker"—one in whom small quantities of toxin are liberated from time to time, but never in sufficient amounts to do great harm.

There seems to me to be one characteristic of the tuberculous at all times, even in their good phases: their normal attributes, especially perhaps their expansive ones, are accentuated; the adventurous become more adventurous, the cheery more cheery, the generous more generous. Just as in G.P.I. the megalomaniacs are those patients who were always that way inclined in their normal days, the melancholics are those who were always of rather a depressed nature, while the ordinary natures in whom the cosmic rhythm brought grave and gay phases are alternately megalomaniacs and melancholics, so in tubercle the natural characteristics are enhanced.

There is one very marked type of tuberculous mentality which is not nearly so common in these days of controlled temperature as it used to be: the fervid, fiery, febrile type, the extrovert with a mission and the tuberculous toxin as a compelling force within him. Many cases be culled from history, the records of social reform, and criminology. Probably the two last-mentioned characteristics are due to the same cause, the lowering or poisoning of the more recently acquired inhibitory mechanism or restraint. Another vasodilator poison, alcohol, does the same; and it has this too in common with the tubercular toxin: it renders its victim contentment.

Much has been written about the increased sexuality of the tuberculous, the old puritanical school who thought that

tuberculosis was the Nemesis of sexual excess being superseded by the kindlier French school who recognised that the excess was the result of the unnatural stimulus of the toxin. This too seems to be much rarer nowadays—or at any rate it does not obtrude itself—but when it does occur it seems to have one characteristic, which is just what one would expect from a poisonous stimulus: satisfaction is never reached and desire doth outrun performance. The three cases who have been brought to my notice were all ambulant, febrile, and did not know they had the disease.

There are some who regard a certain cantankerousness, a desire to hurt, a waspishness, as part of the abnormal state of the tuberculous. But surely that is acquired through a normal psychological process. A young man with his career shattered, the brand of Naaman imagined, cabined and confined, or a married man, the clouds of financial chaos approaching him, is merely reacting normally to hard circumstances. Prisoners of war apparently did the same, the crews of ships on long voyages certainly do—and without the same excuse.

#### THE TUBERCULIN TEST—(Continued from page 18)

11. World wide use of the tuberculin test has shown the incidence of tuberculous infection to be much less than was formerly believed.

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**PULMONARY TUBERCULOSIS SURGERY AND THE SANATORIUM—(Continued from page 15).**

through their operative intervention until their discharge from the hospital; and from that time onwards. Statistics as to the indications for pulmonary tuberculosis surgery and the results obtained by surgery will have, at that time, a correct and a permanent value.

To-day, there is much hue and cry about the socialization of medicine. The opponents of any attempt to regulate the practice of medicine to an outside authority have entirely forgotten that in the treatment of pulmonary tuberculosis there has arisen a plan which is, for all practical purposes, socialization in its utmost form. The sanatorium is supported by the city, county, or state by funds obtained largely from taxation of its citizens. The physicians are, therefore, paid employees of whatever organization accounts for the expenses of the sanatorium.

Most observers will agree that, in the main, the job is well done and that tuberculous patients are cared for adequately. This should help to refute the argument that socialization of medicine will decrease the welfare of patients.

Whether the physicians in the sanatoria are adequately repaid for their efforts is a moot question. However, many sanatorium physicians seem to be content to live a life free from financial responsibilities and at the same time being a part, in some measure, in increasing the well-being of humanity. Whether this type of existence is preferable to the usual one of the doctor in private practice, whose every day is filled with the uncertainty of monetary recompense and the strain of intense competition, is only answerable by each individual in the light of his own beliefs and philosophy of life.

**THE INFLUENCE OF PNEUMOTHORAX TREATMENT ON THE PROGNOSIS OF TUBERCULOSIS**

—(Continued from page 21).

fect of pneumothorax on the contralateral lung in bilateral involvement is very frequently favorable, as shown in our series.

When we realize that artificial pneumothorax in the past has seldom been induced in a patient who has early disease and appears to be getting on well, it becomes more and more apparent that this procedure undoubtedly influences favorably many cases where otherwise the patient would be subjected to a long lingering illness and prolonged treatment with little prospect of being ultimately restored to health.

In conclusion, permit us to quote the following statement made by Allen Krause 20 a number of years ago: "All in all, artificial pneumothorax represents by far the greatest advance yet made in the special treatment of pulmonary tuberculosis. Time brings no dimming of its repute. Enlarging experience only adds to its lustre. Experience suggests also that its scope will enlarge: that after ten years of trial and experiment we are settling down into a period of its more intelligent

employment which will lead to its further development.

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## THERAPEUTIC CHAOS IN BRONCHIAL ASTHMA—(Continued from page 12).

or myocardial impairment. Abdomen: slightly distended, liver small, slightly palpable. Spleen not felt. No masses. Reflexes hyperactive.

*Laboratory Examination*

Urine: cloudy, specific gravity 1.014, reaction acid, sugar negative, albumen heavy trace, acetone negative, bile positive. Blood: Hemoglobin 79 per cent, rbc 4,510,000, color index 87, leucocytes 16,000, pdys 83.5, lymphocytes 12.5, large mononuclears .4. Examination of feces for bile negative, blood sugar 98 mg per 100 cc. Vandenberg showed a color change in 15 sec. and complete in 60 sec. Urea 19 mg. per 100 cc. of blood. no leucin or tyrosin crystals found in the urine. X-ray examination of the gall-bladder region, without the dye, was negative. Patient was put on 10 degrees glucose intravenously, body warmth was maintained and fluids forced. Saturated magnesium sulphate, two ounces, given through nasal tube. Next day patient was more comatose, jaundice deepened and she expired on April 26, 1931, two days after admission.

A sample of the preparation used by the patient in this case was submitted to the Department of Health of the City of Los Angeles with the following report:

"Results of examination of sample submitted by you contained, according to my findings, 5.57 per cent of Phenol." Signed, J. S. Carman, Chemist.

The tragic death of this patient from toxic jaundice, as proven by autopsy, definitely proves the need of better control of the patent medicine market and of more cooperation between doctor and patient. I believe this patient would have been greatly benefited by proper diet, elimination and hyperpyrexia treatment, and by a more thorough desensitization.

Before I speak of the therapy of adult bronchial asthma, I wish to make it clear that in this paper I am primarily dealing with those cases of neglected bronchial asthma that form the bane of our lives. Those intractable cases that are beyond the reach of the allergist and in which the secondary bacterial invasion of practically all respiratory organs has created such a pathologic state that only palliative measures can be hoped for.

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2. Gastro-Intestinal Allergy L. P. Gay, J.A.M.A. (March 21, 1936).

(To be concluded in the October issue)

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## Obituary



*Henry Sewall*

IT IS WITH A FEELING of deep reverence and loss, as well as an incapability of doing justice to the subject, that we undertake this slight tribute to a man whose

works, whose contributions to society, and above all, whose human qualities of courage, determination, and gentleness, show the greatness of our loss, Henry Sewall.

We know him mainly as a worker in the field of tuberculosis, but as Professor of Physiology at the University of Michigan, Henry Sewall's experiments in antitoxins were recognized as one of the outstanding achievements in this field of medical endeavor. A tablet has been erected at Ann Arbor to commemorate his work.

Even sickness could not dim his efforts. When pulmonary tuberculosis, its complications, and later typhoid, with rib necrosis, came his way, he removed himself to Denver, and while overcoming his own afflictions, assisted in establishing the research department of the National Jewish Hospital.

Born in Winchester, Virginia, May 25, 1855, Dr. Henry Sewall died from coronary thrombosis in Denver, July 8, 1936.

And while his achievements will live on forever in the annals of society and progress, we can think of no finer tribute than to say that in the memory of his patients and friends there will always be a niche for just Henry Sewall. L. B. K.

### ROCKY MOUNTAIN TUBERCULOSIS CONFERENCE—(Continued from page 7).

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Dep't. of Preventive Medicine  
Tulane University of Louisiana

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Discussion by Sam'l H. Watson,  
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Charles V. Barley, M. D.

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